TMI-2 SOLUTIONS

May 16, 2022

TMI2-RA-COR-2022-0013

10 CFR 50.90
10 CFR 2.390
10 CFR 50.91

U.S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
NRC Possession Only License No. DPR 73
NRC Docket No. 50-320

Subject: License Amendment Request – Three Mile Island, Unit 2, Decommissioning Technical Specifications, Response to Questions

References:

1) "TMI2 Accident Analyses Questions," dated February 7, 2022 (ML22038A936)

2) Letter TMI2-RA-COR-2022-0002, from Van Noordennen, G. P. (TMI-2 Solutions, LLC), "License Amendment Request – Three Mile Island, Unit 2, Decommissioning Technical Specifications, Supplemental Information," dated January 7, 2022 (ML22013A177)

3) Letter TMI2-RA-COR-2022-0007, from Van Noordennen, G. P. (TMI-2 Solutions, LLC), "License Amendment Request – Three Mile Island, Unit 2, Decommissioning Technical Specifications, Supplemental Information," dated April 8, 2022

Reference 1 requested additional information to aid in the review of potential events at TMI-2 described by Reference 2. Reference 3 committed to submit a revision of the GPU Nuclear Calculation Reactor Building Fire Analysis 4440-7380-90-017 by May 15, 2022. Via discussions with the NRC PM, this date was extended to May 16, 2022.

The amended responses to the TMI-2 Accident Analysis questions are provided as Attachment 1. A copy of the revised Reactor Building Fire Analysis is provided as Attachment 2. TMI-2 Solutions requests that this information be withheld from public disclosure pursuant to 10 CFR 2.390, as described in the Affidavit provided in Attachment 3.

TMI-2 Solutions requests review and approval of this proposed amendment by December 31, 2022, to allow for implementation prior to entering into Decommissioning which is scheduled to occur in January 2023.

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In accordance with 10 CFR 50.91(7)(b)(1), a copy of this submittal has been sent to the Commonwealth of Pennsylvania.

There are no Regulatory Commitments contained in this submittal.

In the event that the NRC has any questions with respect to the content of this document or wishes to obtain any additional information, please contact me at 509-420-3078 or Mr. Tim Devik, TMI-2 Licensing Manager, at 603-384-0239.

Sincerely,

Michael B_ Lackey

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Mike Lackey
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Attachments:

1) Attachment 1 – Amended Response to Questions

2) Attachment 2 – "GPU Nuclear Calculation 4440-7380-90-017, Revision 4, PDMS SAR Section 8.2.5 Fire Analysis Source Terms" (PROPRIETARY)

3) Attachment 3 - 10 CFR 2.390 Proprietary Information Affidavit

cc: w/Attachments

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NRC Lead Inspector – Three Mile Island Nuclear Station – Unit 2
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Attachment 3
License Amendment Request
Three Mile Island Nuclear Station, Unit 2
NRC Possession Only License No. DPR-73
10 CFR 2.390 Proprietary Information Affidavit

TMI-2 Solutions Proprietary Information Affidavit

Affidavit of Mike Lackey, Senior Vice President D&D Operations, EnergySolutions.

TMI-2 Solutions, LLC, contracted with Sargent & Lundy respect to the preparation of the following document which is the property of TMI-2 Solutions, LLC, and which is provided in support of this License Amendment Request:

> "GPU Nuclear Calculation 4440-7380-90-017, Revision 4, PDMS SAR Section 8.2.5 Fire Analysis Source Terms"

This document consists of proprietary information that TMI-2 Solutions, LLC considers confidential. Release of this information would cause irreparable harm to the competitive position of TMI-2 Solutions, LLC. This basis for this declaration is:

I. This information is owned and maintained as proprietary by TMI-2 Solutions, LLC,
II. This information is routinely held in confidence by TMI-2 Solutions, LLC, and not disclosed to the public.
III. This information is being requested to be held in confidence by the NRC by this petition,
IV. This information is not available in public sources,
V. This information would cause substantial harm to TMI-2 Solutions, LLC, if it were released publicly, and
VI. The information to be withheld was transmitted to the NRC in confidence.

I, Mike Lackey, being duly sworn, state that I am the person who subscribes my name to the foregoing statement, I am authorized to execute the Affidavit on behalf of TMI-2 Solutions, LLC, and that the matters and facts set forth in the statement are true to the best of my knowledge, information, and belief.

Michael B_ Lackey

Digitally signed by Michael B_ Lackey
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Mike Lackey
Senior Vice President
D&D Operations
Energy*Solutions*

Sworn To And Subscribed Before Me This 16th Day of May, 2022

Gerard P. van Noordennen

My Commission Expires December 31, 2022

Attachment 1
License Amendment Request
Three Mile Island Nuclear Station, Unit 2
NRC Possession Only License No. DPR-73
Amended Response to Questions

TMI2 Accident Analyses Questions, Amended Responses

2) The reactor building fire appears to be most limiting of the currently analyzed scenarios. Is credit being taken for the reactor building or not? If the doors are open, would this analyzed scenario be most limiting?

The basic changes in the Reactor Building in going from PDMS to DECON is removal of the Equipment Hatch, squaring off of the hole left from Equipment Hatch Removal, and installation of a barrier at the interface between the Reactor Building and the outside structure.

Credit is being taken for the Reactor Building as a passive radiological barrier to the extent that the door between the Reactor Building and the outside structure would only be open for the period of time necessary to allow passage of material or personnel between the two structures.

Additionally, during DECON, other openings may be made in the containment structure. Following good ALARA practices these openings will also include passive radiological barriers.

During normal operation, any air flow would be into containment due to operation of the Reactor Building Purge Exhaust System. In the unlikely event that a fire occurs while this interface door is open, it will be closed by personnel involved in the material transfer and/or entry into or exit from the Reactor Building. Additionally, as the Reactor Building Exhaust Ventilation would be operational at that time, the release would be through a filtered pathway.

If the Reactor Building Exhaust Ventilation is secured during repairs or maintenance, the interface door will be closed. Work in the Reactor Building may be allowed on a case-by-case basis as determined by RP Management and consistent with the TMI-2 Fire Protection Program.

This most limiting scenario, Reactor Building fire, is not based on any specific event. Its main purpose is to demonstrate that even if HEPA Filtration was bypassed, the event would not exceed 100 mrem to the maximally-exposed individual, the standard for declaring a Site Area Emergency at an operating nuclear power plant. Because of the concerns expressed in Question 5 below, the Reactor Building Fire scenario has been reanalyzed to demonstrate the additional margin that exists. The calculation incorporated a more appropriate fractional airborne release factor as used in NUREG/CR-0130.

Attachment 1
License Amendment Request
Three Mile Island Nuclear Station, Unit 2
NRC Possession Only License No. DPR-73
Amended Response to Questions

5) References cite the source term uncertainty as plus or minus 50%. Given the 97 mrem dose result is very close to the 100 mrem limit, how has uncertainty in the source term been accounted for?

With respect to the current most limiting accident of the Reactor Building Fire on the Operations Level of the Reactor Building (305' and 347') the offsite whole-body dose is calculated taking credit for the HEPA filtration present in the Reactor Building Exhaust path and using the fractional airborne release factor of 1.5E-4 used in NUREG/CR-0130 rather than 1E-3 used by GPU Nuclear in its 2019 and earlier calculations. The Reactor Building ventilation will be running when active work is being performed. If secured for maintenance or other reasons, work will be limited to reduce the risk of an unfiltered release from the Reactor Building. Any Reactor Building work allowed when the Reactor Building ventilation is not in operation will be approved on a case-by-case basis as determined by RP Management. The calculated result of an offsite dose from a puff release without benefit of the HEPA filters is 14.6 mrem. Considering that the Reactor Building doors would be closed as described in the response to Question 2, the fire would be contained within the Reactor Building, and significant plate out would occur within the Reactor Building and the offsite dose would not approach 14.6 mrem. Additionally, as D&D progresses, the source term available for release is diminished through decontamination, dismantlement, packaging, and removal from the areas. These processes will be administratively controlled to further reduce the risk.

9) Please provide the reference "Reactor Building Fire Analysis."

The reference has been provided as Attachment 2.

10) It is good to establish limits (dose rate cutoffs) substantially below the regulations to allow for a factor of safety and account for uncertainties. NRC staff would like to be able to establish how those limits were derived.

The reanalysis of a Reactor Building Fire using a more realistic Airborne Release Fraction provides a substantial Safety Margin with a Factor of Safety of approximately 6.